

AMENDMENTS TO THE CLAIMS

This listing of claims replaces prior versions, and listings, of claims in the application:

Listing of Claims

- 5 1. **(CANCELLED)** Integrated biosensor and simulation system comprising:
 - a sensor for sensing a biological target to generate a signal; and
 - a simulator for using the signal and a model of the target to generate a therapeutic or diagnostic output.
- 10 2. **(CANCELLED)** The system of claim 1 wherein:
 - the sensor is reconfigurable by the simulator.
- 15 3. **(CANCELLED)** The system of claim 1 wherein:
 - the sensor senses a food material for consumption by the biological target to generate a second signal, the simulator further using the second signal to generate the therapeutic or diagnostic output.
- 20 4. **(CANCELLED)** The system of claim 1 wherein:
 - the simulator generates the output according to a regulatory condition.
5. **(CANCELLED)** The system of claim 1 wherein:
 - the sensor couples to the simulator via a programmable switch.

6. **(CANCELLED)** Automated sensor and simulation method comprising the steps of:

sensing a biological target to generate a signal; and

simulating using the signal and a model of the target to generate a therapeutic or diagnostic output.

5

7. **(CANCELLED)** The method of claim 6 wherein:

a simulator for simulating reconfigures a sensor for sensing.

8. **(CANCELLED)** The method of claim 7 wherein:

10 the sensor senses a food material for consumption by the biological target to generate a second signal, the simulator further using the second signal to generate the therapeutic or diagnostic output.

9. **(CANCELLED)** The method of claim 7 wherein:

15 the simulator generates the output according to a regulatory condition.

10. **(CANCELLED)** The method of claim 7 wherein:

the sensor couples to the simulator via a programmable switch.

20 11. **(WITHDRAWN)** Implantable network-biosensor comprising:

a sensor unit for receiving a multi-sensor signal from a biosensor platform for detecting a biological material of a host; and

a controller for processing a systems-biology platform for verifying or modifying a simulation model associated with the biological material.

12. (WITHDRAWN) The network biosensor of claim 11 wherein:

5 the sensor unit is configurable or programmable for detecting multi-sensor signaling, thereby enabling the biosensor platform to access one or more sensor signals from the group consisting essentially of a DNA or RNA sensor, a peptide or protein sensor, an antibody or antigen sensor, a vector or virus-vector sensor, a lipid or fatty-acid sensor, and an inorganic-ion or electrochemical sensor.

10

13. (WITHDRAWN) The network biosensor of claim 11 wherein:

the sensor unit is configurable or programmable for detecting multi-sensor signaling, thereby enabling the biosensor platform to access one or more sensor signals from the group consisting essentially of a tissue-factor sensor, a steroid sensor, a neurotransmitter sensor, a pH sensor, a free-radical sensor, a carbohydrate sensor, a neural sensor, a chemical sensor, a small-molecule sensor, an exon sensor, a metabolites sensor, an intermediate sensor, a chromosome sensor, and a cell sensor.

14. (WITHDRAWN) The network biosensor of claim 11 wherein:

20 the sensor unit comprises a positioning chip for immobilizing or positioning the biological material for sensing thereof.

15. (WITHDRAWN) The network biosensor of claim 11 wherein:

the sensor unit receives another multi-sensor signal from another biosensor platform for detecting another biological material of the same or another host.

16. (WITHDRAWN) The network biosensor of claim 11 wherein:

5 the controller is configurable or programmable for processing multiple simulation applications, thereby enabling the systems-biology platform to access one or more simulation models from the group consisting essentially of a genomics model, a proteomics model, a computational chemistry model, a pharmacogenomics model, a computational biology model, a computational biophysics model, a computational cell behavior model, a pharmacokinetics model, a metabolomics model, and a 10 transcriptomics model.

17. (WITHDRAWN) The network biosensor of claim 11 wherein:

the controller is configurable or programmable for processing multiple simulation data, 15 thereby enabling the systems-biology platform to access one or more simulation data from the group consisting essentially of a genetic-disorder or mutation data, an infectious disease or infection data, an immunity-disease data, a single-organ or cell-type autoimmune disease data, and a neoplasia data.

20 18. (WITHDRAWN) The network biosensor of claim 11 further comprising:

a therapeutic unit for releasing or dispensing a therapeutic material from a reservoir in or onto the host, whereby the sensor unit may automatically detect an effect of the therapeutic material on the host.

19. (WITHDRAWN) The network biosensor of claim 18 wherein:

the therapeutic unit is configurable or programmable for releasing or dispensing the therapeutic material alternatively from manufacture means, thereby enabling the
5 systems-biology platform to instruct the therapeutic unit configurably or programmably using one or more manufacture-means components from the group consisting essentially of pharmaceuticals, biopharmaceuticals, reconfigurable biocatalytic chips, tissue scaffolds, and micro or nano-array or electro-mechanical tools.

10 20. (WITHDRAWN) The network biosensor of claim 11 wherein:

the controller processes the systems-biology platform adaptively for generating a diagnostic or therapeutic signal or report, whereby the systems-biology platform may access one or more simulation applications from the group consisting essentially of a neural or learning network, a statistical or probabilistic expert, fuzzy-logic or
15 knowledge-based system, an artificial intelligence or decision-making inference-engine or program, and a supervised or unsupervised Bayesian or Markovian analysis, clustering, criterion or classification program.

21. (NEW) Sensor apparatus comprising:

20 a multi-functional array coupled programmably to a peptide or protein sensor, an antibody sensor, a carbohydrate sensor, and a cell sensor.

22. (NEW) The apparatus of claim 21 wherein:

the sensor array comprises a reconfigurable hardware switch logically interconnecting a plurality of biosensors to a networked controller.

23. (NEW) The apparatus of claim 21 further comprising:

5 a positioning chip, coupled to one or more of the array sensors.

24. (NEW) The apparatus of claim 23 wherein:

the positioning chip comprises a patch clamp.

10 25. (NEW) The apparatus of claim 21 wherein:

the peptide or protein sensor comprises an electrophoresis tag or micro-assay, or protein chip.

26. (NEW) The apparatus of claim 21 wherein:

the antibody sensor comprises a phagotope biochip.

15

27. (NEW) The apparatus of claim 21 wherein:

the sensor array couples further to a vector or virus vector sensor comprising a micro-array or assay with known sequenced virus attached, or a micro-array or assay that detects homologs.

20

28. (NEW) The apparatus of claim 21 wherein:

the carbohydrate sensor comprises a glycochip, or a whole blood glucose monitoring system.

29. (NEW) The apparatus of claim 21 wherein:

the cell sensor comprises a bionic chip for cell-growth.

5 30. (NEW) The apparatus of claim 21 further comprising:

a therapeutic unit comprising a pill comprising a micro-pump, a polymer scaffold comprising hydrogel, or an implantable bio-MEMs chip comprising a medication reservoir, such unit being coupled to at least one sensor.

10 31. (NEW) The apparatus of claim 21 wherein:

the sensor array couples further to a DNA sensor comprising a micro-array or assay.

32. (NEW) The apparatus of claim 31 further comprising:

a controller comprising a systems-biology platform that determines automatedly when
15 the DNA sensor detects a genomic mutation indicating compromised ability to produce
thiopurine S-methyltransferase enzyme.

33. (NEW) Sensor apparatus comprising:

a multi-functional array coupled programmably to a peptide or protein sensor, an
20 antibody sensor, a carbohydrate sensor, or a cell sensor;
a positioning chip, coupled to one or more of the array sensors;

a therapeutic unit comprising a pill comprising a micro-pump, a polymer scaffold comprising hydrogel, or an implantable bio-MEMs chip comprising a medication reservoir; and

a controller that controls the therapeutic unit or the sensor array.

5

34. (NEW) Sensor apparatus comprising:

a multi-functional array coupled programmably to a peptide or protein sensor, an antibody sensor, a carbohydrate sensor, or a cell sensor;

wherein the peptide or protein sensor comprises an electrophoresis tag or micro-assay,

10 or protein chip; the antibody sensor comprises a phagotope biochip; the carbohydrate sensor comprises a glycochip, or a whole blood glucose monitoring system; and the cell sensor comprises a bionic chip for cell-growth.

35. (NEW) The apparatus of claim 34 wherein:

15 the sensor array couples further to a vector or virus vector sensor comprising a micro-array or assay with known sequenced virus attached, or a micro-array or assay that detects homologs; and to a DNA sensor comprising a micro-array or assay.